Claims

[c1] 1. A method of processing a workpiece, comprising:
providing a database that can be filtered into subgroups of operational data gathered from previously processed workpieces;
calculating evaluation criteria for a selected subgroup of operational data;
determining whether the evaluation criteria satisfy predetermined requirements;
if the evaluation criteria satisfy the predetermined requirements, processing the workpiece using a process condition determined by the selected subgroup of operational data; and
if the evaluation criteria do not satisfy the predetermined requirements, repeating the method with a different selected subgroup of operational data.

[c2] 2. The method of claim 1, wherein the step of processing the workpiece comprises measuring the workpiece at a measuring step.

[c3] 3. The method of claim 1, wherein the step of processing the workpiece comprises not measuring the workpiece at a measuring step.

[c4] 4. The method of claim 1, wherein the step of processing the workpiece comprises processing the workpiece on a process tool having a predetermined process capability for the workpiece.

[c5] 5. The method of claim 1, comprising the further step of using a default process condition if all of the subgroups of operational data have been exhausted.

[c6] 6. The method of claim 1, wherein the evaluation criteria comprises a normality value and a capability value.

[c7] 7. A system for optimizing a manufacturing process, comprising:
a database of operational data gathered from previously performed manufacturing processes;
a filtering system for filtering the database into a data subset;
a calculation system for calculating evaluation criteria for the data subset;
an iteration system that causes the filtering and calculation systems to be rerun for a different data subset; and
a system for determining operating conditions of the manufacturing process based on the calculated evaluation criteria.

[c8] 8. The system of claim 7, further comprising an analysis

system for determining if the evaluation criteria meets a set of predetermined requirements.

[c9] 9. The system of claim 8, wherein the iteration system is rerun if the selected data subset fails to provide evaluation criteria that meets the set of predetermined requirements.

[c10] 10. The system of claim 7, wherein the evaluation criteria includes a capability ratio and a normality value.

[c11] 11. The system of claim 10, wherein the evaluation criteria further comprises a sample size.

[c12] 12. The system of claim 7, wherein the manufacturing process comprises a metrology operation for taking measurements of a semiconductor.

[c13] 13. The system of claim 12, wherein the analysis system implements a skip lot sampling optimization if the evaluation criteria meet the set of predetermined requirements.

[c14] 14. The system of claim 7, wherein the operating conditions comprise selecting a tool set to deploy for the manufacturing process.

[c15] 15. The system of claim 7, wherein the filtering system includes a set of filters that filter on parameters that in-

clude: semiconductor technology and level; semiconductor part number and level; semiconductor technology, tool and level; and semiconductor part number, tool and level.

[c16] 16. A program product stored on a recordable medium for optimizing a manufacturing process, comprising:
means for filtering a database of operational data gathered from previously performed manufacturing processes into a plurality of data subsets;
means for calculating evaluation criteria for a selected data subset;
means for determining if the evaluation criteria meet a set of predetermined requirements; and
means for repeating the calculating and determining processes for a new data subset if the selected data subset fails to provide evaluation criteria that meet the set of predetermined requirements.

[c17] 17. The program product of claim 16, wherein the evaluation criteria includes a capability ratio and a normality value.

[c18] 18. The program product of claim 17, wherein the evaluation criteria further comprises a sample size.

[c19] 19. The program product of claim 16, wherein the man-

ufacturing process comprises a metrology operation for taking measurements of a semiconductor.

[c20] 20. The program product of claim 19, wherein the determining means implements a skip lot sampling optimization if the evaluation criteria meet the set of predetermined requirements.

[c21] 21. The program product of claim 16, wherein the manufacturing process comprises selecting a tool for deployment.

[c22] 22. The program product of claim 20, wherein the repeating means is repeated for each of a plurality of data subsets for each of a plurality of candidate tools.

[c23] 23. The program product of claim 16, wherein the means for filtering includes a set of filters that filter on parameters that include: semiconductor technology and level; semiconductor part number and level; semiconductor technology, tool and level; and semiconductor part number, tool and level.

[c24] 24. A method of optimizing a manufacturing process, comprising:
providing a database of operational data gathered from previously performed semiconductor fabrication processes;

providing a set of filters that include operational parameters of the current metrology process;
filtering the database with a selected filter to generate a data subset;
calculating evaluation criteria for a selected data subset;
iterating the filtering and calculating steps for different data subsets; and
determining operating conditions of the manufacturing process based on the calculated evaluation criteria.

[c25] 25. The method of claim 24, further comprising the step of, after the calculating step, determining if the evaluation criteria meets a set of predetermined requirements.

[c26] 26. The method of claim 25, wherein the iterating steps includes selecting a new filter from the set of filters if the evaluation criteria fails to meet the set of predetermined requirements.

[c27] 27. The method of claim 24, including the further step of using skip lot sampling if the evaluation criteria meet the set of predetermined requirements.

[c28] 28. The method of claim 24, including the further step of implementing a metrology process if none of the set of filters provides evaluation criteria that meet the set of predetermined requirements.

[c29] 29. The method of claim 24, wherein the evaluation criteria comprises a capability ratio and a normality value.